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STUDY OF THE USE OF EDIBLE POWDERS TOMATO SAUCE TECHNOLOGIES

A current problem is the quality and safety of food produced. With the deteriorating environmental situation, food contamination by radionuclides, toxic elements, nitro compounds, pesticides, antibiotics, etc. It should be noted that this situation has a negative impact on the health of the people and that the consequences are as follows: the reduction of life expectancy and the increase in morbidity and pathology of newborns. There was a need to rehabilitate the structure and quality of food, to develop products enriched by biologically active substances, and to expand the use of foods with high biological value [1].

The Department of Preservation Technology of the National University Food Technology has conducted a study to enable the use of fruit and berries for food powders. To this end, powder has been obtained from the blueberry berries of ordinary, with the establishment of its physico-chemical properties.The patterns of the influence of the blueberry powder on the functional properties of the foodstuffs were investigated in the example of tomato sauces. [2].

The content of the components of the carbohydrate complex and the organic acids in the blueberry powder was determined by the authors for the scientific justification of the technologies and the prescription of tomato sauces, with the addition of a blueberry powder and the establishment of their food value [2].The results are shown at table 1.

Table 1.

Mass fraction of carbohydrates and organic acids in a blueberry powder, gm/100g

The table shows that the pectin substances contained in the supplement obtained from the blueberry berry have a good tying capability.

Indicator	Powder bilberries
Sugars: Monosaccharides Sucrose	 20,5 3,0
Polysaccharides: starch cellulose Pectin substances: Pectin soluble protopectin	 4,7 18,6 2,1 1,7
Organic acids in terms of malic acid	6,6

This binding ability of powder can be attributed to the presence of low esterify pectin substances containing free carboxylic groups, which link heavy metals to the formation of complex compounds.

The introduction of a blueberry powder for tomato sauce of 8-12% increases the content of such micronutrients as potassium, calcium and phosphorus to 2.5 times. In addition, there is an increase in the number of β-carotene, vitamins C and E respectively at 2.4, 1.2 and 1.6 times.

Therefore, the powder from berries can be recommended as a functional supplement to the food that calls heavy and radioactive metals and makes them out of the organism [1-3].

Among the nutritional factors that are of particular importance to health, the full and regular supply of mineral resources is essential. The content of the macro - and micronutrients powdered from blueberries is presented table 2. The largest quantity of blueberries powder

was calcium and phosphorus potassium. The blueberry powder also has a low sodium content relative to potassium, which is a positive factor in the prevention of atherosclerosis and hypertensive diseases. The powder from berries is quite rich in the elements of the hematopoietic complex - iron, manganese, cobalt [3].

Table 2.

Mineral composition of the blueberry powder, gm/100gm

Indicator	Powder bilberries
ash	2,90
macroelements, mg % potassium	514,00
calcium	229,00
magnesium	177,00
sodium	62,10
phosphorus	185,00
microelements, mg % iron	6,72
cobalt	0,29
manganese	26,70

Studies have shown that the blueberry powder is a rich source of vitamins (c acid, β-carotene, tocopherol) and can be used successfully in the manufacture of tomato sauces with functional properties.

In addition to R-active substances, in blueberries and processed products, carotene, vitamin C and E were discovered, known as powerful antioxidant and antihypoxant agents (table 3). The most flame-retardant components which are β-carotene and tocopherol. Vitamin C losses with drying are much smaller than those in literary sources. This is probably connected, but with the presence of blueberries P-active substances that exhibit antioxidizing effects on ascorbate groups acid and reduce its oxidizing and recovery potential.

Table 3.

Of total vitamins mass proportion blueberry of ordinary and dry powder, mg%

Vitamin	Bilberries	Powder bilberries
Ascorbic acid	408	298
β-Carotene (provitamin A)	3,16	2,59
Tocopherols	4,15	3,47

It follows from the table that, with the thermal effects for blueberries berries, the losses are (% to the original): ascorbate groups acid - 27, β-carotene - 18, tocopherol-16.

Analysis of the results of the studies has shown that a blueberry berry powder can be used in the production of canned and other products not only to enrich their functional ingredients but also to provide them with new technological properties [4].

Observed improvements in the structural and mechanical characteristics and organoleptically properties of the finished product.

References

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